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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: VECTORS FOR REGULATING GENE EXPRESSION

(57) Abstract: The present invention pertains to vectors for regulating gene expression having at least one gene expressing cassette and at least one gene suppressing cassette, wherein the gene expression cassette encodes a polypeptide of interest, and wherein the gene suppressing cassette encodes a short interfering RNA (siRNA) molecule that reduces expression of a target gene by RNA interference. The present invention further includes vectors that contain suppressor cassettes in conjunction with cassettes upregulating gene expression regulated by either a constitutive promoter, such as a general CMV promoter, or a tissue specific promoter. The present invention further includes vectors that contain Dengue virus gene suppression cassettes. The present invention further includes pharmaceutical compositions containing such vectors, methods of modulating the expression of genes in a host using such vectors, and method of producing such vectors.

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INTERNATIONAL SEARCH REPORT

Inte Application No
PC 2004/005566

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C12N15/11 C12N15/86

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, Sequence Search

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	ADELMAN ZACH N ET AL: "RNA silencing of dengue virus type 2 replication in transformed C6/36 mosquito cells transcribing an inverted-repeat RNA derived from the virus genome." December 2002 (2002-12), JOURNAL OF VIROLOGY, VOL. 76, NR. 24, PAGE(S) 12925-12933, XP002292381 ISSN: 0022-538X	1,2,4-6, 12,16, 17, 19-22, 34,35, 37-39, 47,48
Y	page 12926, right-hand column, paragraph 3 - page 12927, left-hand column, paragraph 1; figures 1,2 page 12927, right-hand column, paragraph 2 page 12931, left-hand column, paragraph 2 - page 12932, left-hand column, paragraph 2 ----- -/--	24

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

16 August 2004

Date of mailing of the international search report

31.01.05

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/005566

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PAUL C P ET AL: "EFFECTIVE EXPRESSION OF SMALL INTERFERING RNA IN HUMAN CELLS" NATURE BIOTECHNOLOGY, NATURE PUBLISHING, US, vol. 20, no. 5, May 2002 (2002-05), pages 505-508, XP001121066 ISSN: 1087-0156	1-6, 8-20, 34-41, 47,48
Y	page 506, left-hand column, paragraphs 2,3; figure 1 page 507, right-hand column, paragraph 2 page 508, left-hand column, paragraph 1	24
Y	ABBAS-TERKI T ET AL: "Lentiviral-mediated RNA interference" HUMAN GENE THERAPY, XX, XX, vol. 13, no. 18, 10 December 2002 (2002-12-10), pages 2197-2201, XP002978528 ISSN: 1043-0342 abstract page 2198, left-hand column, paragraph 2 page 2200, right-hand column, paragraph 3 - page 2201, left-hand column, paragraph 1	24
P,X	US 2003/148519 A1 (GOOD PAUL D ET AL) 7 August 2003 (2003-08-07) paragraphs '0126!, '0176!, '0180!, '0183!, '0211!, '0218!, '0219!, '0245!; figures 1-10	1-6, 8-20, 34-41, 47,48

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2004/005566

Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of Item 1.b of the first sheet)

i. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

a. type of material

☒

a sequence listing

☐

table(s) related to the sequence listing

b. format of material

☒

in written format

☒

in computer readable form

c. time of filing/furnishing

☒

contained in the international application as filed

☒

filed together with the international application in computer readable form

☐

furnished subsequently to this Authority for the purpose of search

2.

☐

In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3.

Additional comments:

INTERNATIONAL SEARCH REPORT

ional application No.
rCT/US2004/005566

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

Although claims 34-46 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-20, 24, 26-29, 31-41, 47, 48 (all in part)

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

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FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

Continuation of Box II.1

Although claims 34-46 are directed to a method of treatment of the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
PCT/US2004/005566

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2003148519 A1	07-08-2003	NONE	